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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,360	02/12/2001	Dae Young Kim	2950-0186P	7013

2292 7590 04/06/2004

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EXAMINER	
BRITT, CYNTHIA H	

ART UNIT	PAPER NUMBER
2133	7

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/780,360	KIM ET AL.	
	Examiner	Art Unit	
	Cynthia Britt	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12 January 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The new drawing figure 1 with corrections was received on January 12, 2004. This drawing is acceptable. The objection to the drawings has been withdrawn in view of the changes.

Response to Arguments

Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 1, 8, and 14, the phrase "...forming one ECC block to perform an error correction on the basis of the one ECC block" is unclear. The examiner would like to point out that most if not all of the prior art presented teach the use of inner and outer parity in a matrix form, interleaved and stored on a storage medium. The addition of the phrase mentioned above does not seem to add any function, as the block of data appears to be in the standard format (as disclosed in the background portion of this

application and also in Nakane et al. U.S. Patent No. 6,621,782 column 2 lines 1-8) and in general *error correction is preformed on the data based on an error correction code* not based on a block. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is unclear to the examiner based on the wording of these claims that there would be any difference in the way the ECC process would function in this claim or the prior arts of record. Pages 5-7 of the current specification appear to contain the core of this disclosure, specifically the matter contained in Figure 5.

As per claim 14, line 7 the phrase "...data block in where the outer parity..." is unclear.

As per claims 2-7, 9-13 and 15-20, these claims are dependent on the rejected independent claims and inherit the 35 U.S.C. 112, second paragraph issues of the independent claims and will not be further considered on the individual merits of each claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,2,8-10, and 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Zook U.S. Patent No. 6,052,815.

As per claims 1, 2, 8-10, and 14-15, Zook teaches using product codes (inner and outer parity) to form a matrix (data block) of data to be interleaved and stored in a storage medium. Using an error correction system for computer storage devices that avoids the latency associated with verifying the validity and completeness of corrections to a multi-dimensional code. The validation is carried out using a cyclic redundancy check (CRC). During a write operation, it CRC redundancy symbols are computed over user data received from a host system, and after appending the CRC symbols, the data is randomized by XORing it with a pseudo random data pattern. ECC symbols are then generated over the randomized data to form row (Q) and column (P) codewords of a product code; the product code is then written to the disk. Upon readback, the product code is stored in a data buffer for decoding by a P/Q decoder. During a first pass over the Q codewords, a data CRC syndrome is generated over the uncorrected randomized data; the data CRC syndrome is stored in a data CRC register. Also during the first pass and subsequent passes, when corrections are made to the P or Q codewords the correction values are applied to an error CRC register. After processing a complete CRC codeword, the data CRC and error CRC registers are combined to generate a final

CRC syndrome. The final CRC syndrome is compared to a constant to determine if the corrections to the product code are valid and complete, where the constant equals the CRC over the random data pattern. In this manner, the CRC check can be performed over the randomized data, thereby avoiding the latency associated with accessing the data buffer to derandomize the data before generating the CRC syndrome. (Figures 3A, 3B, and figure 11,column 5 line 23 through column 6 line 14, column 8 lines 22-51)

The examiner would also like to point out that claims 3, 4, 7, 11, 12 and 19 are claiming only what was admitted prior art in the background of the current invention. See pages 1 and 2 of the current specification.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,972,417 Sako et al.

This patent teaches combining data blocks with inner and outer parity used in a storage medium. (Column 10 line 10 through column 12 line 30, figures 6-7)

U.S. Patent No. 6,621,782 Nakane et al.

This patent discloses that in the DVD-RAM standard, data is recorded in sectors on a disk, and is subjected to error-correcting coding in units of 16 sectors, called an ECC block. Data of 32 KB constituting one ECC block is arranged in the form of matrix of 172.times.192 bytes (or 172 columns.times.192 rows), and Reed-Solomon codes

(inner code PI, outer code PO) of 10 bytes and 16 bytes are added in column direction and row direction, respectively, to constitute a product code. (Column 2 lines 1-8)

U.S. Patent No. 6,223,322 Michigami et al.

This patent teaches a method and apparatus for high-speed memory management of ECC product-coded data arrays read back from DVD storage subsystems in which rows of length Y.ltoreq.2.sup.N.times.(2m+1) of the array are read from disk and written in alternate blocks of 2.sup.N bytes per block and (2m+1) blocks per row into successive addresses of a synchronous dynamic random access memory (SDRAM) operable both as a buffer and an interleaved pair of memories. Array data is subjected to detection and correction of error and/or erasure by ECC processing of data extracted from and rewritten into the SDRAM, the array being extracted, ECC processed, and rewritten to and from the SDRAM in block interleave column major order and then in block interleave row major order. (Column 3 lines 10 –55)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Britt whose telephone number is 703-308-2391. The examiner can normally be reached on Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 703-305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cynthia Britt
Examiner
Art Unit 2133

ALBERT DECADY
SUPERVISORY PATENT EXAMINER
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